

Tomographic imaging using penetrating radiation

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Abstract

A penetrating radiation source (14) is disposed on one side of an object (10) which is on an object support (12). A flat panel radiation detector (18) is stationarily disposed on the opposite side of the object (10) than the source (14). A moving system (16) moves the source (14) with respect to the object (10). In each position (Xi, Yi, Zi) of the source (14) a centre ray of the x-ray beam strikes the detector (18) at a corresponding location (xi, yi, 0). For each position (Xi, Yi, Zi) of the source (14), the image (xi, yi, 0) of an object located on a focal plane offsets by a vector displacement (Di) relative to a reference position (xo, yo, zo) of the image when the source is at (X0, Y0, Z0). A processor (28) shifts and interpolates each view by the different vector displacements corresponding to each of the focal planes (L1, L2,...) and integrates the images to generate a series of slice image representations which are stored in a volume image memory (30). In this manner, by adjusting the view offset by an amount corresponding to each of the focal planes,

(L1, L2, ...) the same data set is used to generate all of the slices of the resultant volume image. 

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